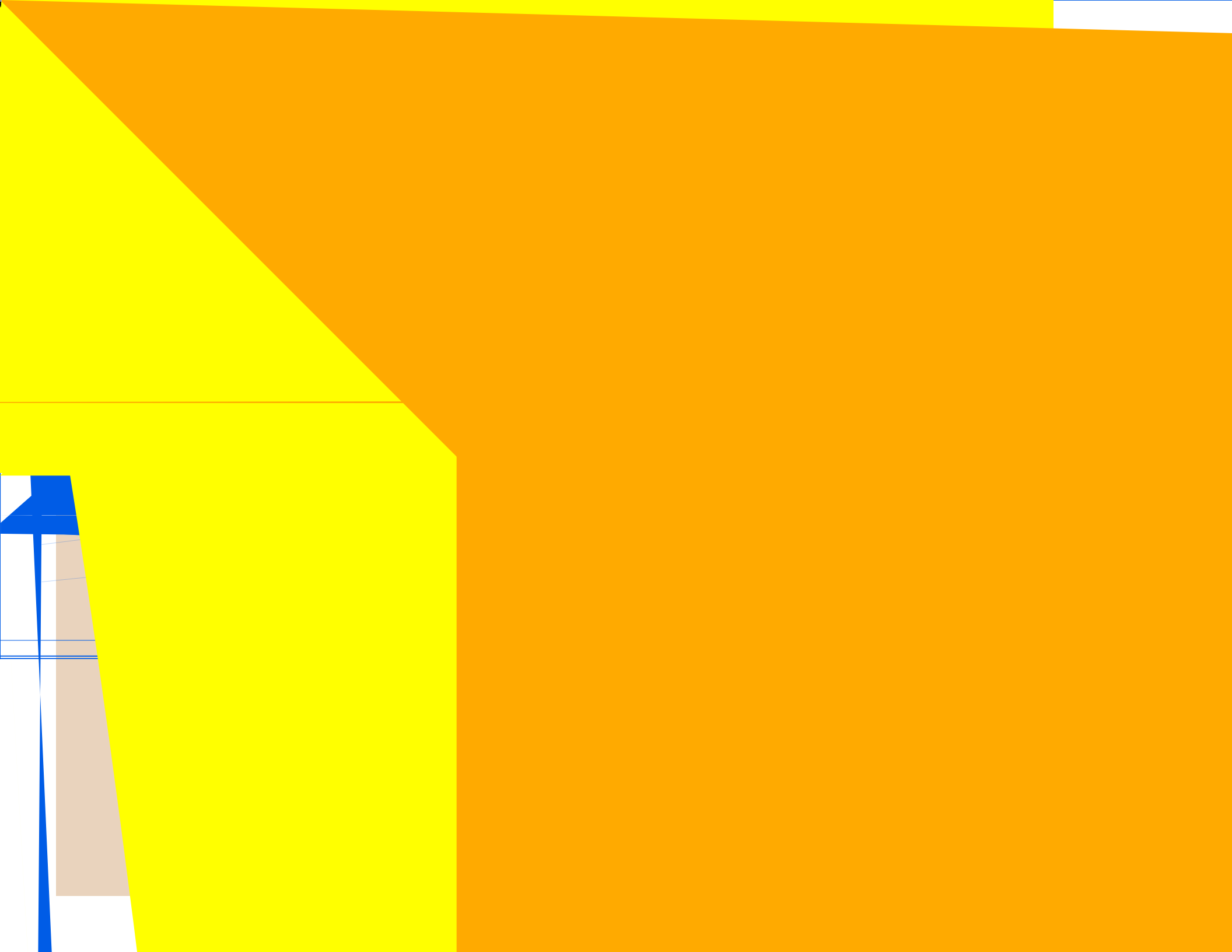


Southern Regional Cooperative Soil Survey Conference:

Innovative Technologies for the New Soil Survey
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Soil Mapping

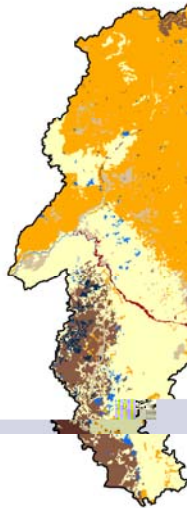
Spatial Scale

Taxonomic Accuracy

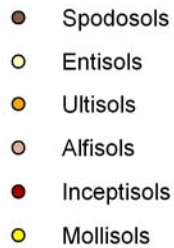
Santa Fe River Watershed (3,585 km²) ~8 counties in NE FL

SSURGO (Soil Data)

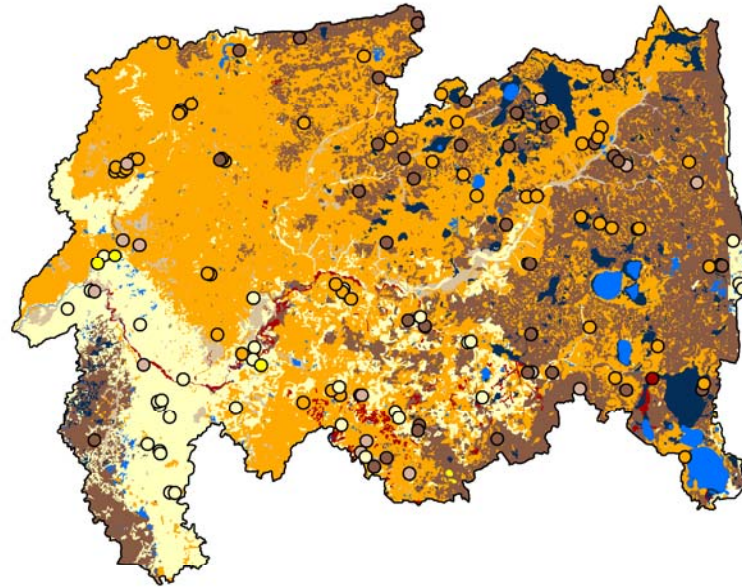
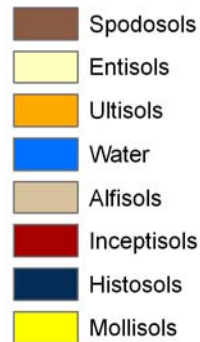
Soil Orders



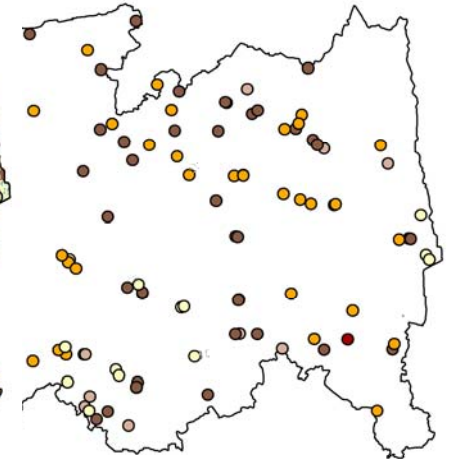
Soil Orders



Soil Orders



1: 143) - Wade Hurt



Soil Order accuracy: 60.3%

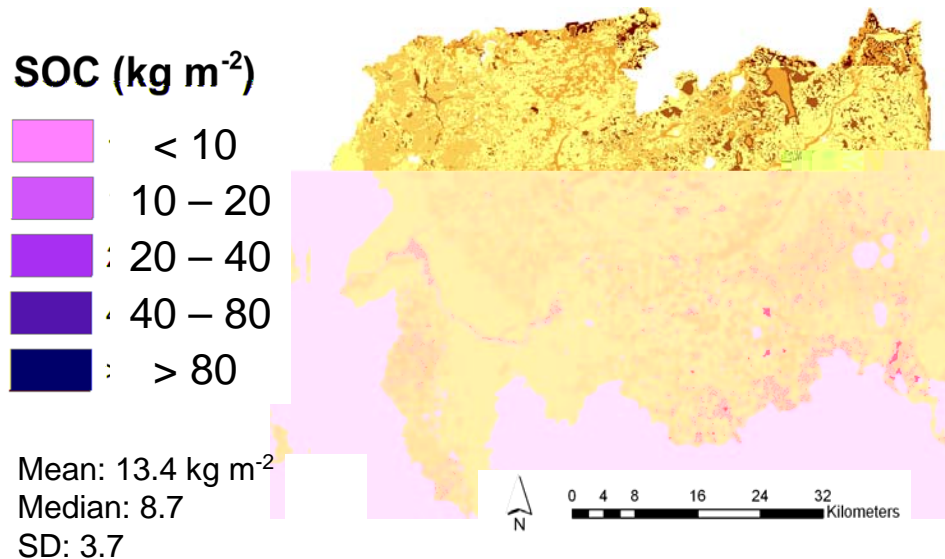
Accuracy Soil Order & drainage class: 45.1%

Soil Series accuracy: 20.4%

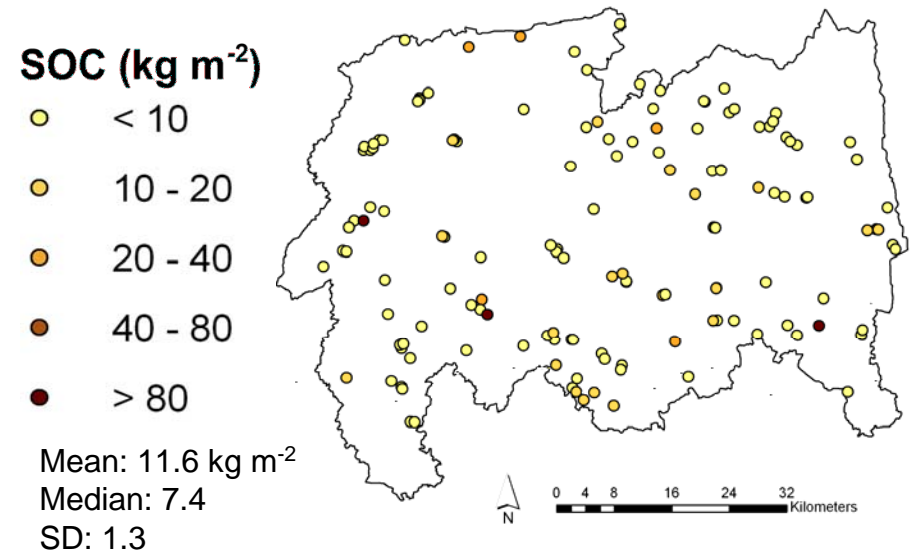
Soil Property Accuracy

Santa Fe River Watershed (3,585 km²) ~8 counties in NE FL

SSURGO (Soil Data Mart) 1:24,000



Field sampling (n: 141) – Lab Data



Soil organic carbon (SOC) accuracy (1 m profile):

Root Mean Square Error = 27.8 kg m⁻²

Absolute SOC stored within watershed (1m profile) [SSURGO]:

53,350,771 Mg C

+/- 73,556,748 Mg C error

Tremendous needs for high-resolution and high-quality soil data

Soil Carbon Sequestration



Soil and Water Quality

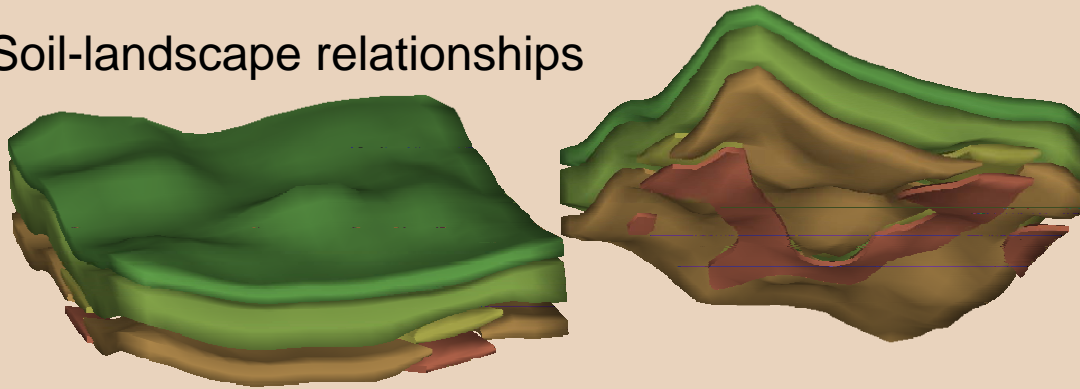


Google Images





Soil-landscape relationships



Remote sensing

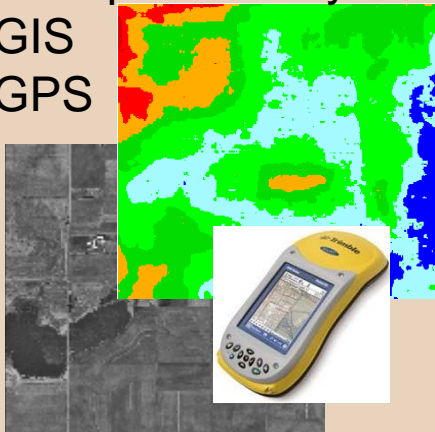


Field mapping

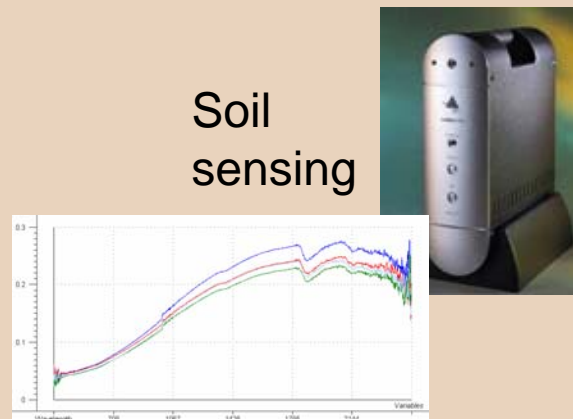


Geospatial analysis

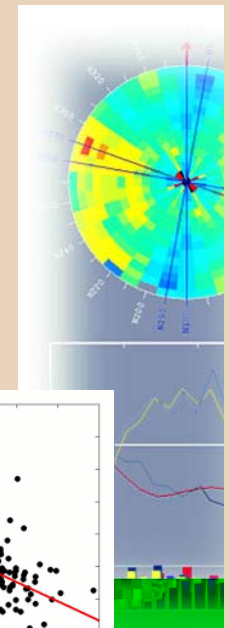
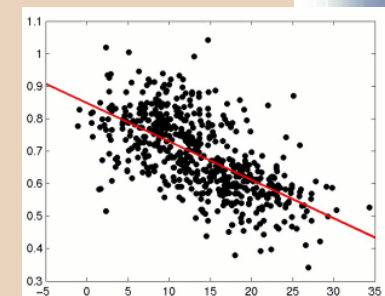
GIS
GPS



Soil sensing

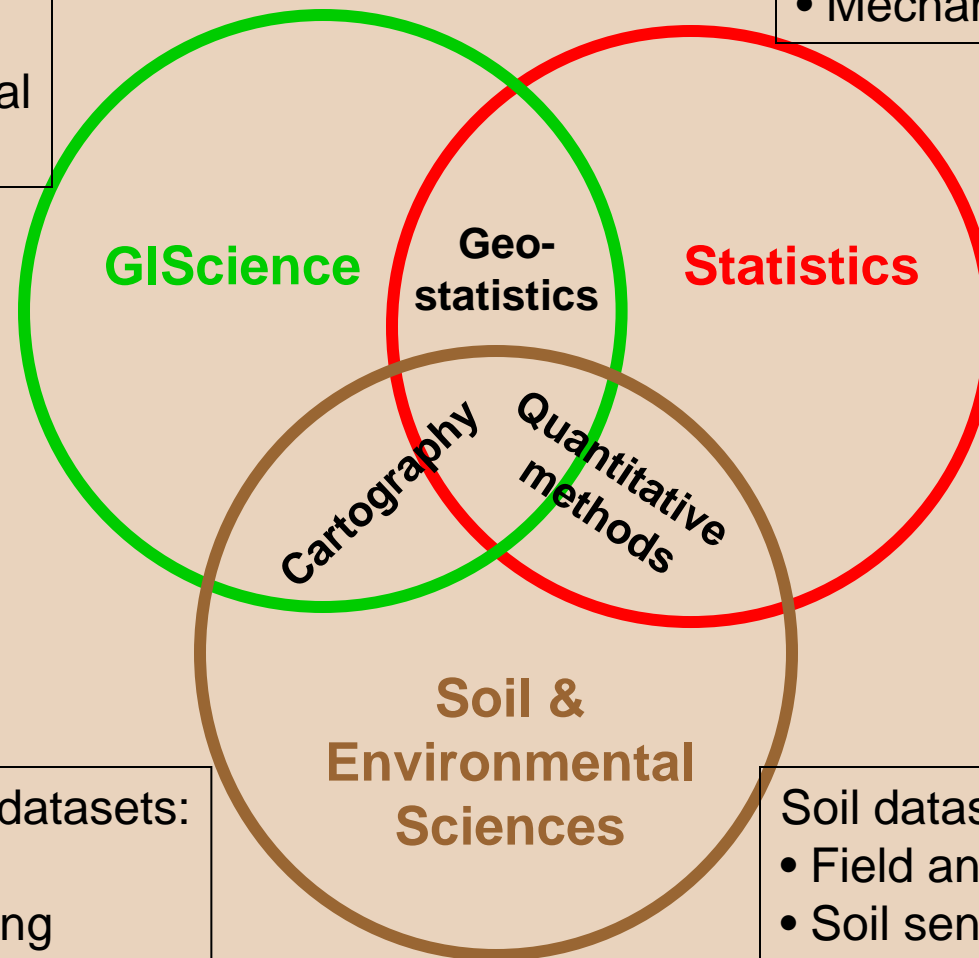


Models



- GIS - multi-scale data integration
- Complex geospatial methods

- Soil-landscape models:
- Functional (stochastic; deterministic)
 - Mechanistic (simulation)



- Environmental datasets:
- Field data
 - Remote sensing

- Soil datasets:
- Field and analytical data
 - Soil sensing

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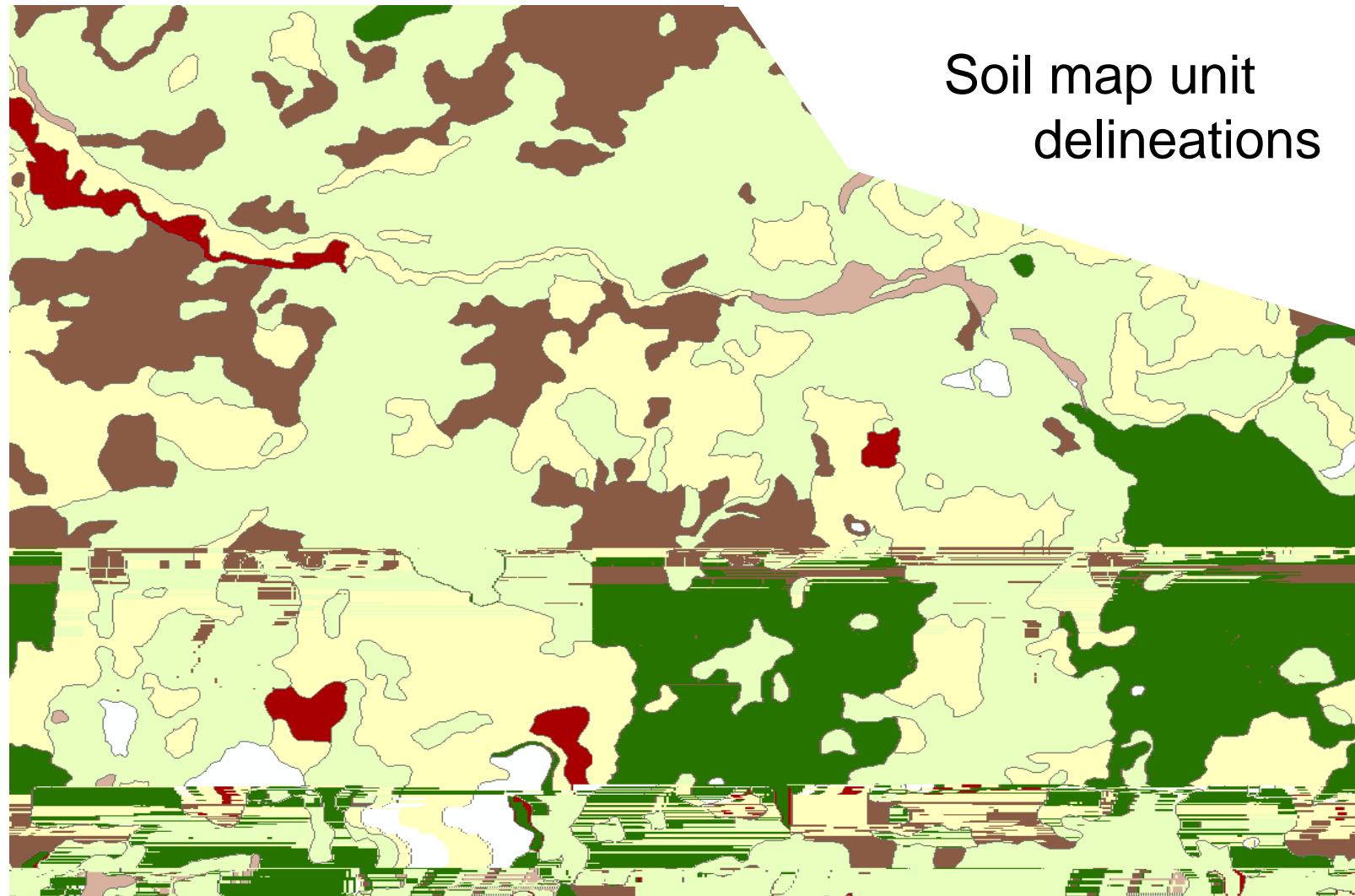
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Soil Mapping

Spatial Variability

Soil map unit delineations



0 0.25 0.5 1 1.5 2 Kilometers

Key questions:

How large to make a map unit or soil pixel?

Which soil attributes should be mapped in a unit/pixel?

What is the accuracy and precision of soil data?

